



· LIGHTING DESIGN · ELECTRICAL · SMART CITIES ·
ENERGY REDUCTION · LIGHTING IMPACT

NORTHERN FIELD, HIGH POST

LIGHTING STRATEGY

DFL-UK

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EXECUTIVE SUMMARY

The Application Site is Northern Field in High Post. The Proposed Development is for erection of a building amounting to 6,968 sqm GIA (Use Classes E(g), B2 and B8) with associated facilities, access with security, parking, hard and soft landscaping, drainage and associated works; A new roundabout from the A345 with footways and bus stops; A new access to Chemring Countermeasures UK including turning and security; Solar Fields; and associated works.

The Application Site has been assessed as being located within an E2 environmental zone (see **Section 6** for details).

The Local Planning Authority for the Application Site is Wiltshire Council with Policy 51 & 57 applying to the proposed lighting from the Wiltshire Core Strategy, Adopted January 2015.

Concerns around the impact the proposed lighting may have on the historic monuments of Stonehenge, Avebury and Associated Sites and Old Sarum have been considered. Due to the distance of these locations from the Application Site, the intervening buildings, topographic undulation, woodland, and existing lighting (for sites such as the existing Chemring Counter Measures, the High Post Business Park) increases in lighting will be only just noticeable at worst from isolated locations. The lighting strategy seeks to mitigate the potential effects of lighting on these receptors to within acceptable limits.

The proposed lighting has been applied sensitively to the area due to its location within a rural setting. Embedded mitigation within the lighting design has ensured that light pollution and light spill are minimised to avoid adverse effects on potentially sensitive receptors.

The proposed lighting is compliant with the 1 Lux post-curfew limitations from GN01:2021 on the Potential Human Amenity Receptor (PHAR) adjacent to the east of the Application Site. The vertical illuminance calculations demonstrate that light levels on PHAR 001 are 0.20 Lux which is within the 1 Lux post curfew limits for an E2 environment zone. Therefore, **The Stones Hotel will not experience unacceptable levels of obtrusive light** from the implementation of the proposed lighting.

This Lighting Strategy concludes that the proposed lighting achieves compliance with all relevant legislation, national and local policies, British Standards and industry guidance.

1. INTRODUCTION

1.1. General

- 1.1.1. This Lighting Strategy has been written by DFL (Designs for Lighting Ltd¹), a lighting design consultancy specialising in Lighting Impact Assessments, obtrusive light mitigation, and detailed lighting design.
- 1.1.2. The Lighting Strategy is intended to set out a minimally obtrusive approach to the lighting, whilst ensuring it is necessary and considers the sensitivity of human, environmental and ecological receptors.
- 1.1.3. Lighting associated with the Proposed Development will comply with relevant British Standards and Institution of Lighting Professionals (ILP) guidance to ensure obtrusive light is minimised in accordance with best practice.
- 1.1.4. This report outlines the following:
 - Relevant obtrusive light policies in direct relation to the Proposed Development;
 - Relevant National and Local Policies;
 - Why the Proposed Development requires artificial lighting; and
 - Details as to how lighting will be implemented for the Proposed Development.
- 1.1.5. Through careful design and mitigation, this Lighting Strategy ensures the lighting installation at the Proposed Development will be in accordance with British Standards, Guidance and Local Policy.

¹ <https://www.dfl-uk.com/about/>

2. LEGISLATIVE FRAMEWORKS AND NATIONAL POLICIES

2.1. Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

- 2.1.1. Since 2005, artificial light has been incorporated as a potential statutory nuisance. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states: ²

“The following matters constitute “statutory nuisances” for the purposes of this Part, that is to say— [...]

[...] artificial ³light emitted from premises so as to be prejudicial to health or a nuisance;

[...]and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint”.

2.2. National Planning Policy Framework 2024 (Published 2025)

- 2.2.1. The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how they are expected to be applied and provides a framework for local plans. With regard to light pollution, the NPPF was updated in February 2025 and states that the following elements are to be considered⁴:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- > mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- > identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- > limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”*

² <https://www.legislation.gov.uk/ukpga/1990/43/part/III/crossheading/statutory-nuisances-england-and-wales> Section 79, paragraph 1,

³ 2005 Section 102 relating to section 79, Indent reference (fb)

⁴ Paragraph 198 NPPF 2024 page 57

2.3. Planning Practice Guidance

2.3.1. Guidance for assessing the effects of proposed artificial lighting is outlined in the planning practice guidance (PPG). The guidance states:⁵

“Does an existing lighting installation make the proposed location for a development unsuitable, or suitable only with appropriate mitigation? For example, this might be because:

- *the artificial light has a significant effect on the locality; and/or*
- *users of the Proposed Development (e.g., a hospital) may be particularly sensitive to light intrusion from the existing light source.*

Where necessary, development proposed in the vicinity of existing activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme, reflecting the agent of change principle. Additional guidance on applying this principle is set out in the planning practice guidance on noise.

- *Will a new development, or a proposed change to an existing site, be likely to materially alter light levels in the environment around the site and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?*
- *Will the impact of new lighting conflict with the needs of specialist facilities requiring low levels of surrounding light (such as observatories, airports and general aviation facilities)? Impacts on other activities that rely on low levels of light such as astronomy may also be a consideration but will need to be considered in terms of both their severity and alongside the wider benefits of the development.*
- *Is the development in or near a protected area of dark sky or an intrinsically dark landscape where new lighting would be conspicuously out of keeping with local nocturnal light levels, making it desirable to minimise or avoid new lighting?*
- *Would new lighting have any safety impacts, for example in creating a hazard for road users?*
- *Is a proposal likely to have a significant impact on a protected site or species? This could be a particular concern where forms of artificial light with a potentially high impact on wildlife and ecosystems (e.g. white or ultraviolet light) are being proposed close to protected sites, sensitive wildlife receptors or areas, including where the light is likely to shine on water where bats feed.*
- *Does the Proposed Development include smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies? (As it may change natural light, creating polarised light pollution that can affect wildlife behaviour.)”*

⁵ <https://www.gov.uk/guidance/light-pollution>, Paragraph 002 Ref ID: 31-002-20191101 revision 01 11 2019

3. LOCAL POLICIES

3.1. Wiltshire Council, Wiltshire Core Strategy.

- 3.1.1. The relevant Local Planning Authority (LPA) for the Proposed Development is Wiltshire Council, with policies detailed within the Wiltshire Core Strategy, Adopted January 2015 applying to the lighting associated with the Proposed Development.

The applicable policies are:

“Core Policy 51 – Landscape

Development should protect, conserve and where possible enhance landscape character and must not have a harmful impact upon landscape character, while any negative impacts must be mitigated as far as possible through sensitive design and landscape measures. Proposals should be informed by and sympathetic to the distinctive character areas identified in the relevant Landscape Character Assessment(s) and any other relevant assessments and studies. In particular, proposals will need to demonstrate that the following aspects of landscape character have been conserved and where possible enhanced through sensitive design, landscape mitigation and enhancement measures:

- vii. Tranquillity and the need to protect against intrusion from light pollution, noise, and motion.*

Core Policy 57 – Ensuring High Quality Design and Place Shaping

vii. having regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of privacy, overshadowing, vibration, and pollution (e.g. light intrusion, noise, smoke, fumes, effluent, waste or litter)”

3.2. Adoption Policy

- 3.2.1. Adoptable Lighting associated with the Proposed Development will be designed and installed in accordance with Wiltshire Council's adoptable specification for street lighting.

“Preferred S278 Unit (LED) – Urbis Axia 3 - Warm White (3000K)

The use of “VERY warm white” LED (2700K) may be utilised and directed as appropriate by the Lighting Engineer. For example, within conservation areas or AONB's.

Control Gear / Photocells / CMS

All lanterns shall incorporate control gear suitable for dimming to lower lighting classes. All control gear for LED's shall be electronic LED drivers and have support for dimming capability through pre-programmed dimming when utilised with a photocell and be compatible with Telensa CMS via DALI 2 protocols.

Any pre-programmed dimmed output where applicable shall be dependent on the usage type, expected reduction in traffic volumes and / or times of low pedestrian usage. Dimmed levels shall still meet a suitable lighting class and uniformity levels must be maintained. Reference to ILP Technical Report – TR27 should be made if not consulting with the Local Authority / Consultant.

Dimming of LED Sources

Dimming shall be as per the lantern manufacturers standard product but must have external dimming facility via DALI control for future CMS integration. The use of sensor ready (for Zhaga sockets) may present issues for CMS unless facility is disabled in factory, so careful consideration to specification is required."

3.3. Unadopted Roads

- 3.3.1. Whilst the roads, paths and car parks within the Application Site will be privately maintained, they will be designed to an adoptable class and compliant with the relevant British Standards.

4. BRITISH STANDARDS

4.1. BS 5489-1:2020 - Lighting of Roads and Public Amenity Areas - Code of practice.

- 4.1.1. This standard gives recommendations on the general principles of road lighting, its aesthetics, technical aspects and provides guidance on operational maintenance. It also provides guidance on means of minimizing energy consumption and limiting the impacts on the environment and adjacent properties.

4.2. BS EN 13201-2:2015 - Road lighting. Performance requirements.

- 4.2.1. This British and European standard defines the performance requirements specified as lighting classes for road lighting aiming at the visual needs of the road users, as well as the consideration of the environmental aspects of the road lighting to be applied.

4.3. BS EN 12464-1:2021 - Light and Lighting – Lighting of workplaces

- 4.3.1. This British and European standard specifies requirements for lighting solutions for most indoor workplaces and their associated areas in terms of quantity and quality of illumination. In addition, this document recommends good practise for visual and non-visual lighting needs.

5. GUIDANCE

5.1. Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals GN01:2021)

- 5.1.1. The Lighting Strategy has been developed in accordance with industry guidance aimed at minimising the risk of obtrusive light, which often results from poorly designed or installed external lighting. It draws specifically on the most relevant sections of GN01:2021, which provides best practice recommendations for reducing obtrusive light across a wide range of outdoor lighting applications.

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA Dark Sky Parks.
E1	Natural	Intrinsically dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, etc.
E2	Rural	Low district brightness (SQM ~ 15 to 20)	Sparsely inhabited rural areas, Village or relatively dark outer suburban locations.
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres or suburban locations.
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity.

Table 1: Environmental Zone Descriptions

Environmental Zones	Sky Glow ULR ⁶ (Max %)	Light Trespass (Into Windows) E _v (lux)		Building Luminance Average, Pre-curfew
		Pre- Curfew	Post-Curfew ⁷	Average L (cd/m ²)
E0	0	0	0	0
E1	0	2	0 (1 ⁸)	0
E2	2.5	5	1	5
E3	5	10	2	10
E4	15	25	5	25

Table 2: Obtrusive Light Criteria

⁶ ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.

⁷ Curfew refers to a time when the local planning authority has agreed that the lighting installation should be switched off; this typically refers to 23h00 – 07h00

⁸ If the installation is for public (road) lighting, then this may be up to 1 lx

5.2. GN08:2023 Bats and Artificial Lighting in the UK – Bat Conservation Trust and Institution of Lighting Professionals.

- 5.2.1. This document is aimed at lighting professionals, lighting designers, planning officers, developers, bat workers/ecologists and anyone specifying lighting. It is intended to raise awareness of the impacts of artificial lighting on bats, and mitigation is suggested for various scenarios. However, it is not meant to replace site-specific ecological and lighting assessments, which states the following.

"It is acknowledged that, especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero. Consequently, where 'complete darkness' on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane. These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light adverse behaviour (Stone, 2012)."

"A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component."

"A buffer zone subdivided to into smaller zones of increasing illuminance limit further away from the Supporting Habitat would ensure light levels (illuminance - measured in lux) do not exceed certain defined limits. This has the effect of a gradual decrease in lighting from the developed zone, rather than a distinct cut-off, which may provide useable area for the project which also limits lighting impacts on less sensitive species, or less well-used habitat." (see Figure 1)."

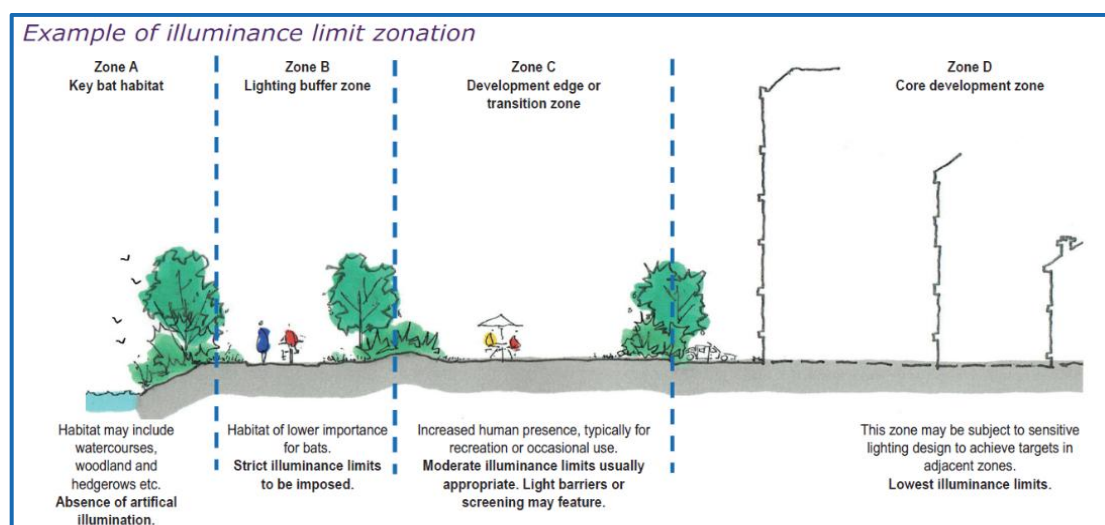


Figure 1: Example of Lighting Zonation Near Sensitive Boundaries & Known Ecological Habitat

5.3. PLG23/2020 Lighting for Cycling Infrastructure.

- 5.3.1. This ILP guidance describes an approach to assessing the need for and the provision to several different cycling infrastructure facilities such as, Cycle routes, Cycle lanes, Cycle gaps, Cycle tracks, Cycleways, shared surfaces for cyclists and pedestrians, Cycle storage facilities.
- 5.3.2. The Law required bicycles ridden at night (between sunrise and sunset) to have, amongst other things, front and rear lights and reflectors.
- 5.3.3. The purpose of lighting on cycle tracks is to enable users to orientate themselves, identify other users, detect potential hazards, discourage crime and engender a feeling of safety and security.
- 5.3.4. The following table extract from PLG23:2020 should be taken into consideration when looking to apply lighting to cycling infrastructure.

	Strategic	Major	Local	Rural
Route type	Core routes linking main settlements and areas of high employment or education	Core leisure routes and routes linking the strategic network to secondary destinations	Feeder routes within urban areas	Rural feeder routes
Common characteristics	Largely segregated network of cycle routes with separation from pedestrian where width allows	Predominantly off-road routes, although some linking sections might be on road	Mix on road routes often with cycle lanes / symbols and off-road shared use links	Predominantly quite on road routes without cycle lanes, with some off road paths.
Surface	Sealed surface	Sealed surface	Generally surfaced routes	Generally, surfaces, but some routes may be unsurfaced
Lighting	Lit within urban areas	Lit within urban areas	On road routes usually lit	Not generally lit.

Table 3: Typical Cycle Route Hierarchy (Table 2: PLG23/2020)

- 5.3.5. As per section 3 of PLG23/2020 where lighting may not be appropriate alternatives to traditional lighting should be considered.

6. DESKTOP STUDY

6.1. Site Description and Context

- 6.1.1. A desktop assessment was completed to understand the Application Site and its position within the current lit environment.
- 6.1.2. The Application Site is located at High Post, 6.5km north of Salisbury. The boundary of the Application Site can be seen in **Figure 2**.

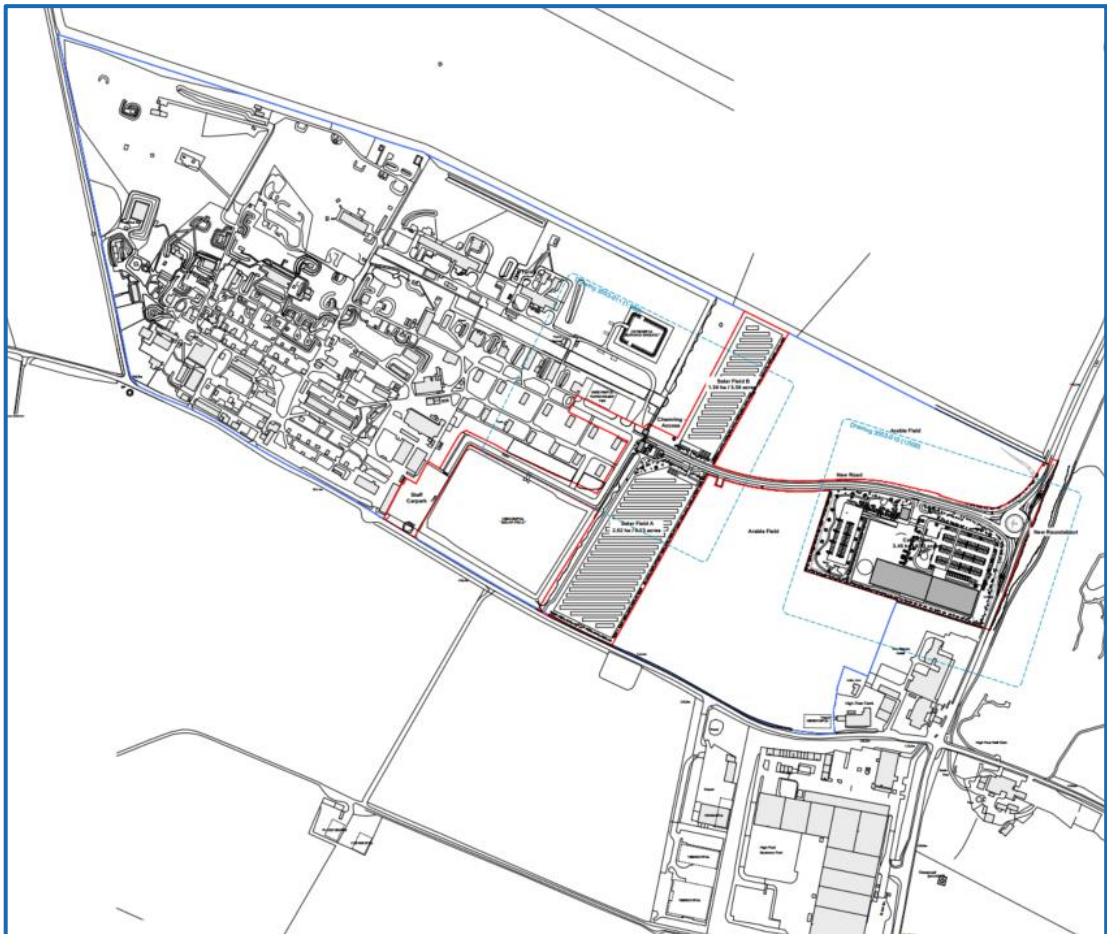


Figure 2: The Application Site Location and Boundary

- 6.1.3. The Proposed Development is for the erection of a building amounting to 6,968 sqm GIA (Use Classes E(g), B2 and B8) with associated facilities, access with security, parking, hard and soft landscaping, drainage and associated works; A new roundabout from the A345 with footways and bus stops; A new access to Chemring Countermeasures UK including turning and security; Solar Fields; and associated works.
- 6.1.4. The Site Layout Plan is shown in **Figure 3**.



Figure 3: Proposed Development Site Layout Plan

6.2. Designated Sites

- 6.2.1. The Application Site is within 2 km⁹ proximity of a designated Special Area of Conservation (SAC), Sites of Special Scientific Interest (SSSI) and Ancient Woodland these are shown in **Figure 4** and referred to as:
- River Avon (SAC & SSSI) 1.2km west of the Application Site.
 - The Terrance Wood (Ancient Woodland) 1.6km north of the Application Site.
- 6.2.2. There is not a designated National Landscape or Local Nature Reserve within a radius of approximately 2 km of the Application Site.
- 6.2.3. The Application Site is also within 2km of Stonehenge, Avebury and Associated Sites World Heritage Site.

⁹ Based on empirical thresholds from visual impact studies, tall slender structures in open landscapes are typically prominent up to about 2 km, still relatively prominent between 2 and 5 km, and beyond this distance their prominence declines significantly, based on statements within *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes* study (U.S. BLM-sponsored)

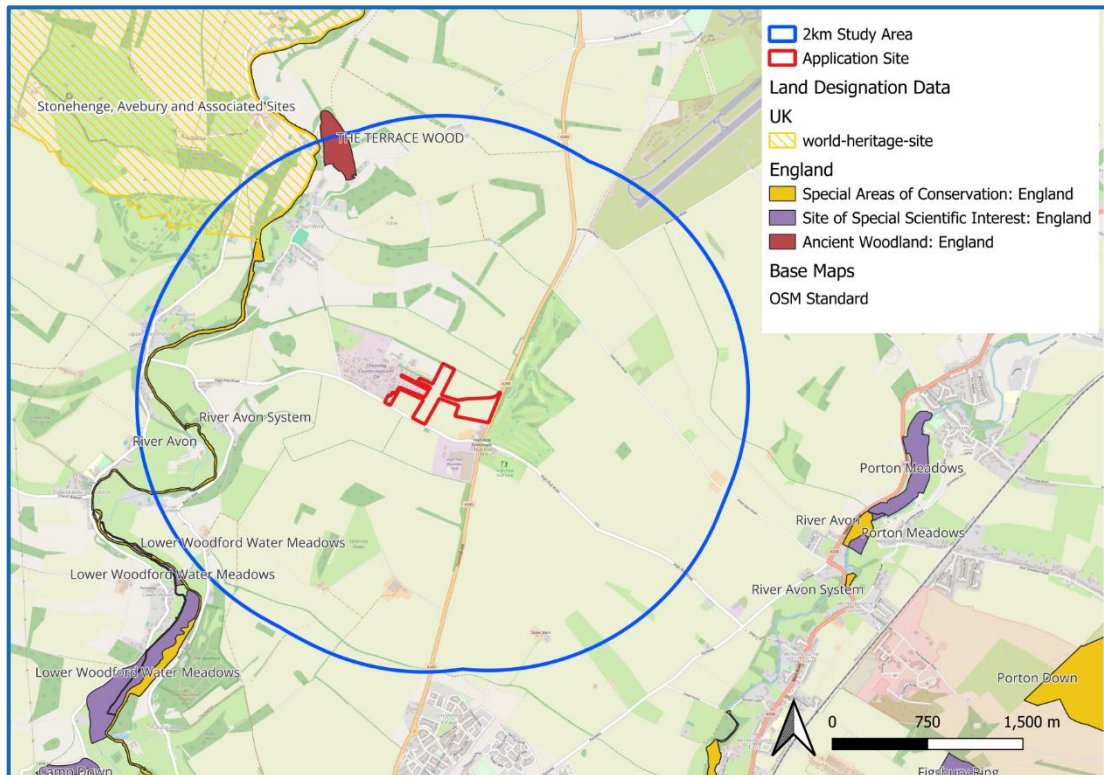


Figure 4: Site Designation

6.3. Existing lighting

- 6.3.1. There is existing lighting within the car park of the commercial units and offices, as would be expected for the use of these facilities. This area forms part of the Application Site. The existing lighting is shown in **Figure 5** and **Figure 6**.



Figure 5: Existing Lighting at the Application Site



Figure 6: Existing Lighting at the Application Site

6.3.2. There is further existing lighting across the existing Chemring Counter Measures site. this takes the form of:

- › Column mounted lighting (floodlighting and street lighting)
- › Façade mounted floodlighting
- › Bulkhead lighting

6.3.3. Example of this lighting can be seen in **Figure 7** and **Figure 8**.

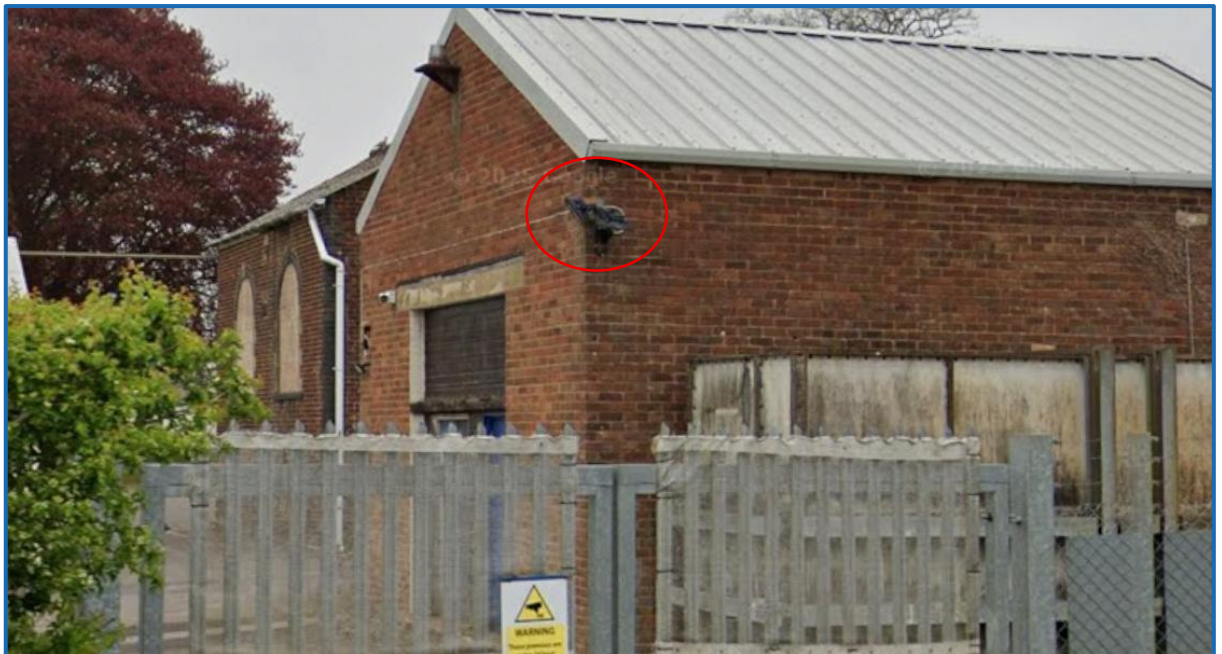


Figure 7: Existing Lighting in the Chemring Counter Measures Site 001



Figure 8: Existing Lighting in the Chemring Counter Measures Site 002

- 6.3.4. There is existing floodlighting for the High Post Salt Store, which is located adjacent to the Application Site. The existing lighting is shown in **Figure 9**.



Figure 9: Existing Lighting of the High Post Salt Store

6.3.5. The A345 runs north to south on the eastern boundary of the Application Site and is an unlit A road, as shown in **Figure 10**. This is also true of the road that runs east to west on the southern boundary of the Application Site.



Figure 10: A345 - Unlit A Road

6.3.6. There is existing lighting associated with the fuel station on the A345 which consists of ceiling mounted luminaires, as shown in **Figure 12**. There is also low level downlighting on the exterior of The Stone Hotel.



Figure 11: Existing Lighting on The Stone Hotel



Figure 12: Existing Lighting of the BP Fuel Station on A345

6.3.7. White Railings Roundabout is a lit roundabout on the A345 <2.8km north of the Application Site, shown in **Figure 13**. The approach taken to light this roundabout informs the Lighting Strategy for the roundabout within the Proposed Development.



Figure 13: Existing Lighting of White Railings Roundabout on A345

6.3.8. The distribution of existing lighting within the landscape surrounding the Application Site can also be seen within CPRE Mapping data (**Figure 14**).

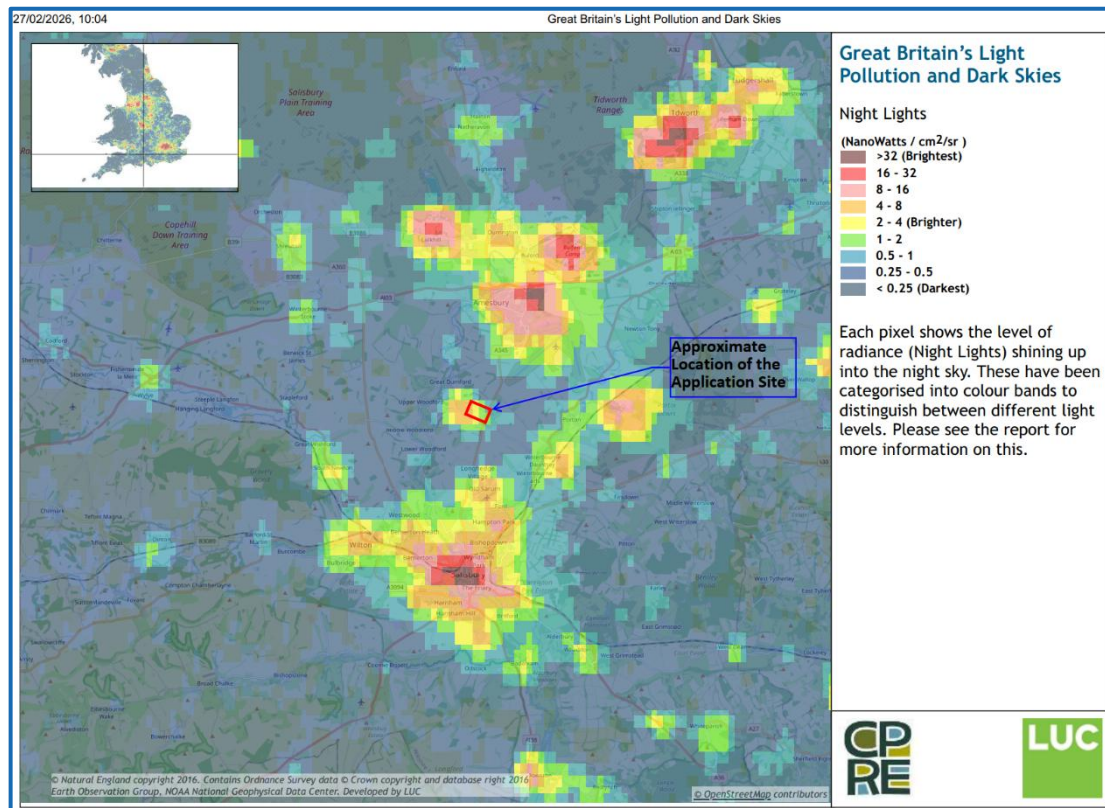


Figure 14: CPRE Light Pollution Mapping

- 6.3.9. The presence of existing lighting directly adjacent to the Application Site is clearly visible on the CPRE mapping within **Figure 14**.
- 6.3.10. This existing lighting is associated with the Chemring Counter Measures site, The Stone Hotel, Highpost Business Park and High Post Sports Store.
- 6.3.11. It can also be seen that Salisbury, Avebury, Larkhill, Bulford Camp, Tidworth, Porton Down and Winterbourne Gunner (Defence Chemical, Biological, Radiological and Nuclear) are prominent sources of lighting within the landscape. The effects of this lighting will be indirect unless direct visibility of the sites is available, and it likely only visible through sky glow in the majority of cases.

6.4. Environmental Zone Classification

- 6.4.1. Based on the evidence of the existing lighting (seen in **Section 6.3**) and the description of the surrounding environment (seen in **Section 6.1**) are similar to those expected within an E2 zone.
- 6.4.2. The Environmental Zone criteria detailed within **Table 1** and **Table 2** informs the basis of the Lighting Strategy. The Application Site is assessed as being located within an E2 Environmental Zone due to its position within a relatively uninhabited rural area.

Zone	Surrounding	Examples	Limitations		Sky Glow ULR (Max)
			Pre-curfew	Post-curfew	
E2	Rural	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, etc.	5	1	2.5%

Table 4: Limitations of Identified Environmental Zone.

7. IDENTIFIED RECEPTORS

7.1. Ecological

- 7.1.1. No ecologically sensitive areas have been identified surrounding the Application Site.
- 7.1.2. However, the Lighting Strategy still seeks to ensure the lowest possible lighting levels are applied and obtrusive light levels are compliant with the relevant Environmental Zone criteria.

7.2. Human Amenity

- 7.2.1. To the east of the site, Potential Human Amenity Receptors (PHAR) have been identified as shown in **Appendix 3 – Sensitive Receptors**. Therefore, this Lighting Strategy has been written in accordance with GN01:2021 (**Table 2 - Obtrusive Light Criteria**).
- 7.2.2. A description of the Potential Human Amenity Receptors can be seen in **Table 5**.

Receptor Type	Receptor No. (Appendix 3)	Description
Human Amenity	PHAR 001	The Stones Hotel, located adjacent to the eastern boundary of the Application Site.

Table 5: Potential Human Amenity Receptors (PHAR)

7.3. Heritage Receptors

- 7.3.1. Concerns around the impact the proposed lighting may have on historic monuments surrounding the Application Site have been highlighted. The historic monuments in question are detailed in **Table 6**.

Receptor Type	Receptor No. (Appendix 3)	Description
Heritage Receptor	001	Stonehenge, Avebury and Associated Site
Heritage Receptor	002	Old Sarum

Table 6: Potential Heritage Receptors

- 7.3.2. The locations of the monuments and word heritage sites in relation to the Application Site can be seen in **Figure 15**.

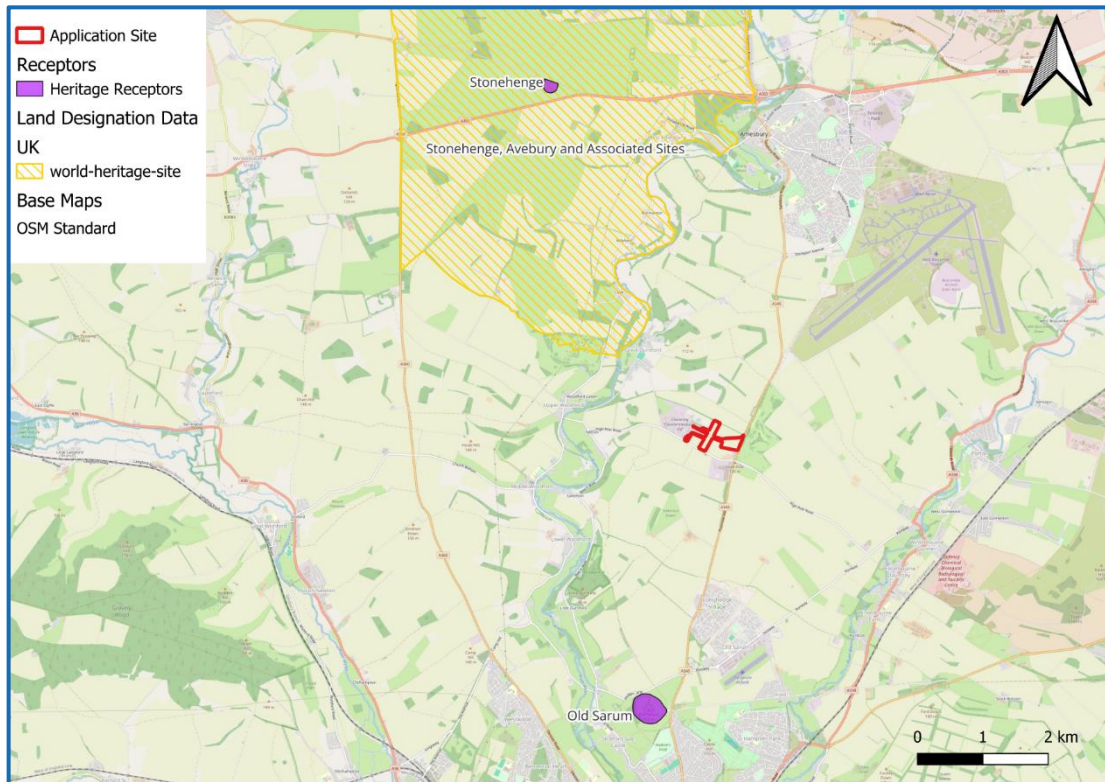


Figure 15: Locations Monuments and Word Heritage Sites in Relation to the Application Site

- 7.3.3. Based on the distances on the monuments and Word Heritage Sites shown in **Figure 15** there will be no effects of light spill or glare on these locations.
- 7.3.4. Additionally, due to the intervening buildings, topographic undulation, woodland, and existing lighting (for sites such as the existing Chemring Counter Measures, the High Post Business Park) increases in lighting will be only just noticeable at worst from isolated locations. As such these locations are not taken forward as receptors into the remained of this report.

8. LIGHTING STRATEGY

8.1. Summary

- 8.1.1. The Proposed Development will require lighting for wayfinding, safety and amenity during the hours of darkness. Lighting will be fit for purpose and sensitive to nearby receptors.
- 8.1.2. The following criteria seeks to ensure that the lighting is not outside of the obtrusive light limits for the Environmental Zone in which the Application Site is located, is sensitive to the area, and provides a recognised standard level of lighting for all adoptable areas requiring illumination. Luminaires will distribute light downwards only to reduce the potential for light spill onto the boundaries surrounding the buildings and upwards towards the sky.
- 8.1.3. Lighting will be of an appropriate specification and designed in accordance with British Standards.
- 8.1.4. Luminaires will be used with integral LEDs and only where the luminaire photometry is available from the manufacturer. This is to ensure the photometric footprint of the luminaires can be modelled to ensure the potential effects of light spill are minimised or mitigated.
- 8.1.5. All lighting unless otherwise stated is to emit a warm white colour temperature light (3000 Kelvin or less) to reduce the potential for adverse effects onto potentially sensitive receptors.
- 8.1.6. Lighting in adopted areas will be required in the following application areas:
 - New Roundabout and Approaches
- 8.1.7. Lighting in unadopted areas will be required in the following task areas:
 - New Road
 - Security Access Point
 - Solar Fields (limited lighting for emergency maintenance)
 - Car Parks
 - Yard Area
 - Warehouse/Assembly and Office Amenity Lighting
 - Footway/Cycleway from Chemring Entrance to C292

8.2. New Roundabout and Approaches

- 8.2.1. The new roundabout on the A345 and approaches, except for New Road, will be illuminated in accordance with the Wiltshire Adoptable Lighting Specification.
- 8.2.2. All lighting will comply with BS 5489-1:2020 and BS EN 13201-2:2015 to ensure the safe use of the roundabout and access to the Proposed Development.
- 8.2.3. The roundabout will be installed within an unlit environment on a single carriageway.
- 8.2.4. PLG02:2013 states that where the approach to a conflict area is not an M class, the use of table A3 from BS5489-1:2020 can be used to determine the lighting class.
- 8.2.5. As per BS 5489-1:2020, this would lead to the assessment that the A345 is comparable to an M4 traffic route, shown in **Figure 16**.

Lighting classes for traffic routes ($v \leq 40$ mph)			
Traffic flow	Lighting class		
	Dual carriageway		Single carriageway
	Junction density: high	Junction density: low	
High to very high ^{A)}	M3	M4	M3
Low to moderate ^{B)}	M4	M5	M4
Very low ^{C)}	M5	M6	M5

NOTE 1 High junction density would be junction centres spaced < 3 km apart. A risk assessment can determine whether some of the junctions constitute conflict areas (see [A.3.2](#)).

NOTE 2 Grey highlighting indicates situations that would not usually occur in the UK.

^{A)} High to very high traffic flow might be defined as either having an ADT of > 40 000, or where the flow exceeds 65% of the lane maximum capacity for dual or multi-lane carriageways or 45% for single carriageways.

^{B)} Low to moderate traffic flow might be defined as either having an ADT of between 7 000 and 40 000, or where the flow is between 35% and 65% for dual or multi-lane carriageways or between 15% and 45% for single carriageways.

^{C)} Very low traffic flow might be defined as either having an ADT of < 7 000, or where the flow is < 35% for dual or multi-lane carriageways or < 15% for single carriageways.

Figure 16: Performance Requirements for Traffic Routes >40mph from BS 5489-1:2020

- 8.2.6. The M4 lighting class informs the basis of the lighting class for the conflict zone of the roundabout.
- 8.2.7. Performance requirements for the roundabout are outlined in **Figure 17**. Following a risk assessment, the lighting class will remain as recommended in BS EN 13201:2015.

Class	Horizontal illuminance	
	$\bar{E}$ [minimum maintained] lx	U_o [minimum]
C0	50	0,40
C1	30	0,40
C2	20,0	0,40
C3	15,0	0,40
C4	10,0	0,40
C5	7,50	0,40

Figure 17: Conflict Lighting Classes for New Roundabout from BS EN 13201-2:2015

Area	Class	BS5489-1:2020 Requirements		MF Used
		Min Lux	Uniformity	
Roundabout	C3	15 Lux	0.40	0.81

Table 7: Design Parameters for New Roundabout from BS EN13201-2:2015

8.2.8. The conflict area approaches are assessed as being:

- 67m on New Road at 30mph
- 133m on the A345 at 60mph (National Speed Limit)

Equipment Specification	
Application Area	Roundabout including approaches (Wiltshire Council Adoptable Specification)
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤6m
Mounting Arrangement	Post top
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	Urbis Schreder (Or Similar Approved)
Luminaire family	Axia 3 (Or Similar Approved)
Example Luminaire Image	
Controls¹⁰	Daylight Sensing / Photocell for dusk-dawn illumination Compatible with Telensa CMS via DALI 2 protocols

Table 8: Luminaire Performance Requirements for New Roundabout

¹⁰ Dimming: when dimming is applied it is announced as a percentage still in use of the total percentage output (dimmed to, not dimmed by).

8.3. New Road

- 8.3.1. The New Road within the Proposed Development will be illuminated in accordance with BS 5489-1:2020 and BS EN 13201-2:2015 for wayfinding, safety and amenity purposes. The lowest practical lighting levels are proposed within this Lighting Strategy.
- 8.3.2. Performance requirements for the New Road are outlined in **Figure 18**, made on the assumption that the New Road will implement a speed limit ≤ 30 mph. Following a risk assessment, the lighting class has been assessed up due to the proximity of a roundabout and the road containing several access areas and a security gate.

Traffic flow	Lighting class		
	E1 to E4 ^{A)}	E1 to E2 ^{A)}	E3 to E4 ^{A)}
	Pedestrian and cyclists only	Speed limit $v \leq 30$ mph	Speed limit $v \leq 30$ mph
Busy ^{B)}	P5	P4	P3
Normal ^{C)}	P5	P5	P4
Quiet ^{D)}	P6	P5	P4

NOTE 1 Table A.5 assumes no parked vehicles; see risk assessment in [4.3.3.2](#).

NOTE 2 An EV lighting class using vertical illuminance, from BS EN 13201-2:2015, Table 6, can be specified in addition to the general lighting class when there are particular concerns about crime and personal safety. EV is calculated at the typical height of a human face (1.5 m) and in relevant viewing orientations.

NOTE 3 To ensure adequate uniformity, the actual value of the maintained average illuminance is not to exceed 1.5 times the value indicated for the class.

NOTE 4 The actual overall uniformity of illuminance, U_{a} needs to be as high as reasonably practicable (see [7.2.6](#)).

NOTE 5 The ambient luminance descriptions E1 to E4 refer to the environmental zone as defined in ILP GN01 [N2].

NOTE 6 The illuminance classes are suggested minimum levels. A risk assessment needs to be carried out to ensure that the light levels are adequate, particularly for pedestrians and cyclists.

^{A)} Environmental zone, as given in ILP GN01 [N2].

^{B)} Busy traffic flow refers to areas where the traffic usage is high and can be associated with local amenities such as clubs, shopping facilities, public houses, etc.

^{C)} Normal traffic flow refers to areas where the traffic usage is of a level equivalent to a housing estate access road.

^{D)} Quiet traffic flow refers to areas where the traffic usage is of a level equivalent to a residential road, and is mainly associated with the adjacent properties or properties on other equivalent roads accessed from this road.

Figure 18: Performance Requirements for New Road from BS 5489-1:2020

Area	Class	BS 5489-1:2020 Requirements		MF Used
		Eav Lux	Min ¹¹	
New Road	P4	5-7.5	1.0	0.81

Table 9: Design Parameters for New Road from BS 5489-1:2020

¹¹ Minimum required lux level

Equipment Specification	
Application Area	New Road (Private)
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤6m
Mounting Arrangement	Post top
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	Urbis Schreder (Or Similar Approved)
Luminaire family	Axia 3 (Or Similar Approved)
Example Luminaire Image	
Controls	Daylight Sensing / Photocell for dusk-dawn illumination

Table 10: Luminaire Performance Requirements for New Road

8.4. Security Access Point

8.4.1. The security access point will be lit as part of the New Road but will also require some supplementary lighting to enable security staff to perform their work.

Equipment Specification	
Application Area	Security Access Point
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤3m
Mounting Arrangement	Wall surface mounted
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	DW Windsor (Or Similar Approved)
Luminaire family	Kirium Wall (Or Similar Approved)
Example Luminaire Image	
Controls	Daylight Sensing / Photocell for dusk-dawn illumination

Table 11: Luminaire Performance Requirements for New Road

8.5. Solar Fields

8.5.1. External lighting within the solar fields will only be required for emergency maintenance during the night and this will be concentrated on the Battery Store Containers.

Equipment Specification	
Application Area	Solar Fields - the Battery Store Container
Correlated Colour Temperature (Kelvin)	≤3000K
Lumen Output (lm)	≤ 1000 lm
Height (m)	≤3m
Mounting Arrangement	Surface Mounted
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	Integral LED (Or Similar Approved)
Luminaire family	SUPER SLIM 2 (Or Similar Approved)
Example Luminaire Image	
Light Spill Diagram reference	Luminaire A
Controls	Emergency Switch for use by Engineer only

Table 12: Luminaire Performance Requirements for New Road

8.6. Yard Area

- 8.6.1. The outdoor yard area will be illuminated in accordance with BS EN 12464-2:2024 for amenity and safety purposes. The lowest possible lighting levels are proposed within this Lighting Strategy.
- 8.6.2. Performance requirements for the outdoor yard area(s) are outlined in **Figure 19**.
- 8.6.3. Following a risk assessment, the lighting class will remain as recommended in BS EN 12464-2:2024.

Table 17 — Industrial sites							
Ref. no.	Type of area, task or activity	$\bar{E}_m$ lx		U_o	R_{GL}	R_a	Specific requirements
		required ^a	modified ^b				
17.1	Short-term handling of large units and raw materials, loading and unloading of solid bulk goods	20	—	0,25	55	70	When the area is non-occupied $\bar{E}_m$ required may be reduced to 5 lx.
17.2	Continuous handling of large units and raw materials, loading and unloading of freight, lifting and descending location for cranes, open loading platforms	50	—	0,40	50	70	When the area is non-occupied $\bar{E}_m$ required may be reduced to 5 lx.
17.3	Reading of addresses, covered loading platforms, use of tools, ordinary reinforcement and casting tasks in concrete plants	100	—	0,50	45	70	Movement detection control preferred for energy savings.
17.4	Demanding electrical, machine and piping installations, inspection	200	—	0,50	45	70	Can be met with use of local mobile lighting.
^a Required: minimum value.							
^b Modified: considers common context modifiers in 5.3.3.							

Figure 19: Performance Requirements for Yard Area from BS EN 12464-2:2024

Area	BS EN 12464-2:2024 Requirements		MF Used
	Required Min Value	Uniformity	
Yard Area	20 Lux	0.25	0.81

Table 13: Design Parameters for Yard Area from BS EN 12464-2:2024

Equipment Specification	
Application Area	Yard Area (Private)
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤10m
Mounting Arrangement	Post top
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	Urbis Schreder (Or Similar Approved)
Luminaire family	Axia 3 (Or Similar Approved)
Example Luminaire Image	
Controls	Daylight Sensing / Photocell for dusk-dawn illumination

Table 14: Luminaire Performance Requirements for Yard

8.7. Car Parks

- 8.7.1. The car parks within the Application Site will be illuminated in accordance with BS 5489-1:2020 for amenity and wayfinding purposes. The lowest practical lighting levels are proposed within this Lighting Strategy.
- 8.7.2. Performance requirements for the car park(s) are outlined in **Figure 20**.
- 8.7.3. Following a risk assessment, the lighting class will remain as recommended in BS 5489-1:2020.

Maintained lighting levels for outdoor car parks		
Type of area and usage	Values in lux	
	$\bar{E}$	U_o
Light traffic, e.g. parking areas of shops, terraced and apartment houses; cycle parks	5	0.25
Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes	10	0.25
Heavy traffic, e.g. parking areas of major shopping centres, major sports and multipurpose sports and building complexes	20	0.25

Figure 20: Performance Requirements for Car Parks from BS 5489-1:2020

Area	Class	BS5489-1:2020 Requirements		MF Used
		Eav Lux	Uniformity	
Car Parks	Medium	10 Lux	0.25	0.81

Table 15: Design Parameters for Car Parks from BS 5489-1:2020

Equipment Specification	
Application Area	Car Parks (Private)
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤6m
Mounting Arrangement	Post top
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	Urbis Schreder (Or Similar Approved)
Luminaire family	Axia 3 (Or Similar Approved)
Example Luminaire Image	
Controls	Daylight Sensing / Photocell for dusk-dawn illumination

Table 16: Luminaire Performance Requirements for Car Parks

8.8. Warehouse/Assembly and Office Amenity Lighting

8.8.1. The warehouse/assembly and office units will require amenity lighting for safe movement of pedestrians and wayfinding purposes.

Equipment Specification	
Application Area	Warehouse/Assembly and Office Amenity Lighting (Private)
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤2.5m
Mounting Arrangement	Wall Mounted
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	Thorn (Or Similar Approved)
Luminaire family	Axyl Gild (Or Similar Approved)
Example Luminaire Image	
Controls	Switching on/off for dusk and dawn

Table 17: Luminaire Performance Requirements for Warehouse/Assembly & Office

8.9. Footway/Cycleway from Chemring Entrance to C292

- 8.9.1. The footway/cycleway will be lit using bollards for amenity and wayfinding purposes.
- 8.9.2. As per PLG23:2020 cyclists in the UK are required to use lights on the fronts and The purpose of lighting on cycle tracks is to enable users to orientate themselves, identify other users, detect potential hazards, discourage crime and engender a feeling of safety and security.
- 8.9.3. **Table 3** states that lighting of cycle routes in rural areas are not generally lit. However, as this path links to the C292, this Lighting Strategy proposes bollard lighting as a low level lighting solution to provide wayfinding and amenity of the path.

Equipment Specification	
Application Area	Footway/Cycleway from Chemring Entrance to C292 (Private)
Correlated Colour Temperature (Kelvin)	≤3000K
Height (m)	≤1m
Mounting Arrangement	Bollard – Ground mounted
Luminaire Tilt (°)	0°
Upward Light Output Ratio (%) E1 < 0%	0%
Luminaire Manufacturer	DW Windsor (Or Similar Approved)
Luminaire family	Pharola DS - shielded (Or Similar Approved)
Example Luminaire Image	
Controls	Switching on/off for dusk and dawn (timers)

Table 18: Luminaire Performance Requirements for Cycle Route

9. SUMMARY OF RESULTS

9.1. Overview

- 9.1.1. The Light Spill Diagram shown in **Appendix 1 – Light Spill Diagram** and **Appendix 2 – Vertical Light Spill Diagram**, demonstrates that the Light Spill Levels associated with the proposed lighting would comply with the obtrusive light guidance set out in ILP GN01:2021, at sensitive receptors.
- 9.1.2. To ensure the worst-case scenario has been modelled, the highest potential light levels have been modelled / presented in the light spill diagram, with the project maintenance factors set at MF = 1.0¹². This demonstrates the light levels at their highest (initial light levels at the start of luminaire life).

9.2. Summary of Results

- 9.2.1. The proposed lighting within the task area(s) is compliant to the relevant policies, standards and guidance.
- 9.2.2. Where human receptors are potentially sensitive to vertical light spill, a vertical illumination grid has been modelled, as shown in **Appendix 2 – Vertical Light Spill Diagram**.
- 9.2.3. The light levels based on the modelling are in keeping with the light levels stated in GN01:2021 for an area identified as an E2 environment. As the roundabout is part of the public road, the lighting for this application allows for a maximum illuminance at the Potential Human Amenity Receptor of 1 Lux for an E2 environmental zone.

Receptor No	GN01/2021 requirements		Maximum Vertical Illuminance (Lux)
	Pre-curfew	Post-curfew	
PHAR 001	5 Lux	1 Lux	0.20 Lux

Table 19: PHAR Results Table, Maximum Illuminance

9.3. Mitigation

- 9.3.1. Careful design ensures the lighting has been minimised onto sensitive receptors in accordance with standards and guidance.
- 9.3.2. Through the use of the control methods detailed in **Section 8**, the amount of light in the affected Application Area is to be restricted to the amount of time required for amenity and safety purposes only.
- 9.3.3. The detailed design is to be completed by a competent person or persons in accordance with the details within this Lighting strategy.
- 9.3.4. Mitigation methods are detailed in **Table 20**.

¹² <https://www.dfl-uk.com/knowledge-hub/faqs/>

Mitigation	Method
Restricting the Upward Light Output Ratio	All luminaires will have an Upward Light Output Ratio of 0%.
Restricting Luminaire Tilt	All luminaires will be installed with a 0° as standard.
Restricting Correlated Colour Temperature (CCT) to 3000K	Restricting the colour temperature of luminaires to ≤3000K for a warm white colour appearance of the luminaire. Although there are no concerns of light sensitive species within the area, the Application Site is still within a rural setting, and the warmer white colour temperature ensures that any potential light sensitive species would be protected from negative effects of artificial lighting.
Using appropriate optics for the areas being illuminated	The luminaire optic used will be specific to the area being lit. This will ensure the task and area is lit to a standard level of light, while also allowing the lux contours to be shaped to the specific areas.
Only using luminaires where Photometry is Available from the Manufacturer	Luminaires will be used with integral LEDs and only where the luminaire photometry is available from the manufacturer. This is to ensure the photometric footprint of the luminaires can be modelled to ensure the potential effects of light spill are minimised or mitigated.

Table 20: Mitigation

10. CONCLUSION

10.1. General

- 10.1.1. Lighting associated with the Proposed Development shall be designed in accordance with the Lighting Strategy for the Application Site outlined in **Section 8**.
- 10.1.2. This Lighting Strategy has been written in accordance with the relevant British Standards, industry guidance and local policies to ensure it is unlikely to give rise to obtrusive light with the potential to affect sensitive receptors.
- 10.1.3. Through the application of this Lighting Strategy sensitive receptors will not be adversely affected by obtrusive light, as shown in **Appendix 1 – Light Spill Diagram** and **Appendix 2 – Vertical Light Spill Diagram**.
- 10.1.4. The Stones Hotel was identified as a Potential Human Amenity Receptor adjacent to the Application Site. Therefore, the lighting design has ensured that the proposed lighting does not exceed the 1 Lux post-curfew limitations from GN01:2021 for an E2 environmental zone where the installation is for public (road) lighting.
- 10.1.5. Light spill and unwanted light pollution, including upward light, has been minimised within the proposed lighting design by only using luminaires where the photometric data is available from the manufacturer to best represent the potential light spill and minimise this on potentially sensitive areas within the development such as hedgerows, treelines and woodland bands. This therefore ensures compliance with Policy 57.
- 10.1.6. In compliance with Policy 51, the Lighting Strategy protects against intrusion from light pollution in the surrounding environment through the embedded mitigation detailed within **Table 20**. This ensure that the implementation of artificial lighting is applied sensitively to the area, whilst ensuring that safe levels of lighting are provided for the task.
- 10.1.7. Through careful design and mitigation, this Lighting Strategy ensures the lighting installation at the proposed development will be in accordance with British Standards, Guidance and Local Policy (Wiltshire Core Strategy, Adopted January 2015).

APPENDIX 1 – LIGHT SPILL DIAGRAM

See accompanying document 4207-DFL-ELG-XX-LD-EO-13001

APPENDIX 2 – VERTICAL LIGHT SPILL DIAGRAM

See accompanying document 4207-DFL-ELG-XX-CA-EO-13001

APPENDIX 3 – SENSITIVE RECEPTORS

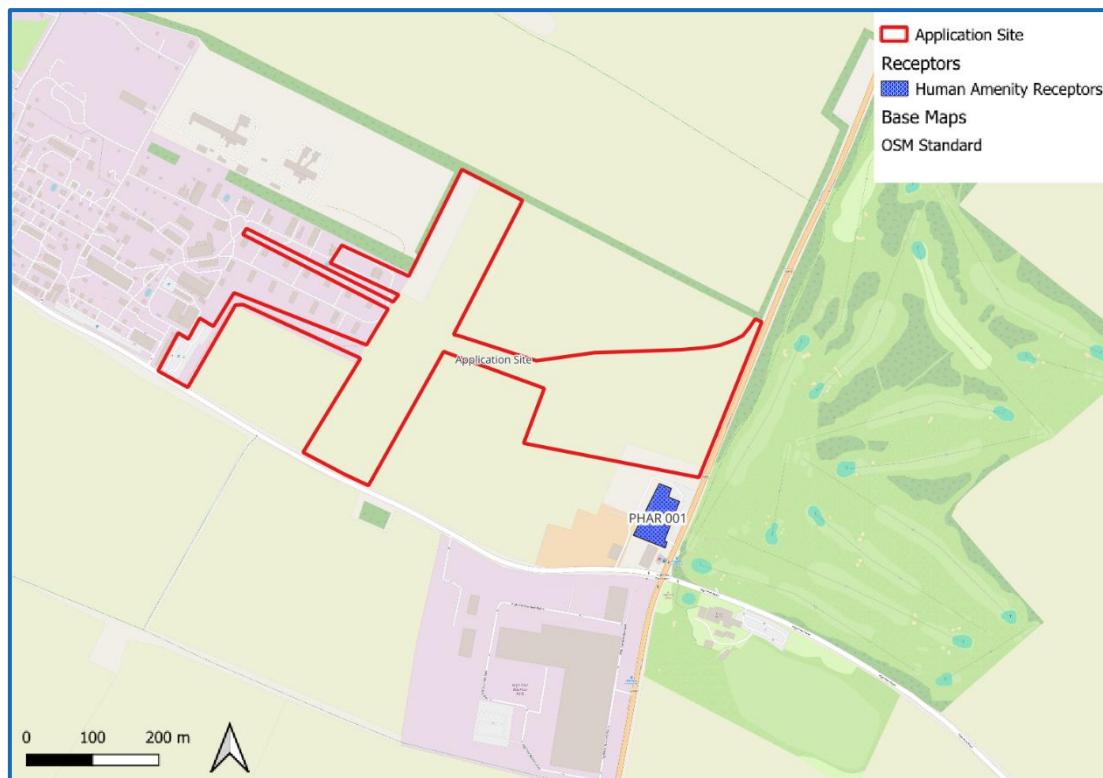


Figure 21: Sensitive Receptors

TECHNICAL DESCRIPTIONS, DEFINITIONS AND ABBREVIATIONS

PHAR: is an abbreviation for a potential human amenity receptor, a location where an observer could have the potential to be affected by the proposed lighting to be installed [Abbreviation used by DFL LI and P.](#)

PSER: is an abbreviation for an area identified as or treated as a location that may host a potentially sensitive ecological receptor. This is generally used where light sensitive bats have the potential to live, forage or use as a flight path, other ecologically sensitive receptors such as (but not limited to) the Great Crested Newt may also be identified by this term. [Abbreviation used by DFL LI and P.](#)

PSR: is an abbreviation for an area where an individual maybe susceptible to light brightness (Light intensity) which may have the potential to cause a hazardous situation. [Abbreviation used by DFL LI and P.](#)

Obtrusive Light: refers to excessive or bothersome artificial light that goes where it shouldn't, causing discomfort and disruption. *Spill light which because of quantitative, directional or spectral attributes in a given context gives rise to annoyance, discomfort, distraction or reduction in the ability to see essential information.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Sky glow: When lights are directed upwards or light is scattered by particles in the air, like dust or water droplets, it creates a glow that makes it hard to see stars. *The increase in diffuse illuminance of the night sky above that produced by natural sources such as the moon and visible star.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Vertical Illuminance: is how much light lands on upright surfaces like walls. It's measured in lux or footcandles and matters for places where the view from a vertical angle is important. *Lighting of vertical surfaces such as walls, windows, statues, sculptures and people's faces.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Correlated colour temperature (CCT): the appearance of light emitted by a light source measured in Kelvin (K), Lower CCT values such as 2700K represent warmer, more yellowish light, *similar to the light from older incandescent lamps. (Tcp)The temperature of the Planckian radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions, measured in absolute temperature on the kelvin (K) scale.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Lux: measures the brightness of light as perceived by the human eye at a specific point on a surface. *The SI derived unit of illuminance, measuring luminous flux per unit area (1 lux =1 lumen/m2).* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Lumens: measure how bright a light appears to our eyes. The SI derived unit of luminous flux; a measure of the total quantity of visible light emitted by a source or received by a surface (unit: lumen). [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Glare: refers to an excess of bright light that makes you uncomfortable or hinders your vision. It happens when there's a big difference between a bright light and the rest of the surroundings. *Glare: condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or by extreme contrasts.* [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.1.8](#)

Luminous intensity: is light brightness or how intense the light source is. light intensity is how intense a light source is emitted or received in a particular direction, this is measured candelas and is termed as luminous intensity I_v <of a source, in a given direction> quotient of the luminous flux, $d\Phi_v$, leaving the source and propagated in the element of solid angle $d\Omega$ containing the given direction, by the element of solid angle (unit: $cd = lm \cdot sr^{-1}$). [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.2.](#)

Candela: is a measurement for the brightness of a light source, taking into account the direction in which the light is emitted. *Base unit of luminous intensity in the International System of Units (SI); the luminous power per unit solid angle emitted by a point light source in a particular direction.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Uniformity (Uo): is an explanation for the even distribution of light across an area or surface. The overall uniformity shall be calculated as the ratio of the lowest luminance, occurring at any grid point in the field of calculation, to the average luminance. [BS EN 13201-3-2015, Calculation of Performance Section 8.3.](#)

Luminance: is how bright a surface appears to our eyes. It considers the light coming from or reflected by an object. L_v <in a given direction, at a given point of a real or imaginary surface> quantity defined by the formula (unit: $cd \cdot m^{-2} = lm \cdot m^{-2} \cdot sr^{-1}$) [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.3.](#)

Illuminance is how much light lands on a surface per square meter. It's measured in lux. More lux means a brighter area. E_v (unit: $lx = lm \cdot m^{-2}$) 1. <at a point of a surface> quotient of the luminous flux $d\Phi_v$ incident on an element of the surface containing the point, by the area dA of that element 2. <at a point of a surface> equivalent definition: integral, taken over the hemisphere visible from the given point, of the expression. [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.10.](#)

Luminaire: a light fixture, this is also sometimes referred to as a lantern or a light fitting, is a product that produces artificial light. *apparatus which distributes, filters or transforms the light transmitted from one or more lamps and which includes, except the lamps themselves, all the parts necessary for fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electric supply* [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.3](#)

ULOR: upward light output ratio or ULOR refers to the amount of light the light fixture will produce upwards as a percentage of its total light output. *RULO <of a luminaire> ratio of the upward luminous flux of the luminaire, measured under specified practical conditions with its own lamp(s) and equipment, to the sum of the individual luminous fluxes of the same lamp(s) when operated outside the luminaire with the same equipment, under specified conditions* [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.12.](#)

Maintenance factor (MF): is an allowance for how well the lights keep working overtime. It considers things like dirt on the light fittings and "wear and tear". *DEPRECATED: light loss factor ratio of illuminance produced by the lighting installation after a certain period to the illuminance produced by the installation when new* Note 1 to entry: The term depreciation factor has been formerly used to designate the reciprocal of the above ratio. Note 2 to entry: The maintenance factor takes into account light losses caused by dirt accumulation on luminaires and room surfaces (in interiors) or other relevant surfaces (in exteriors, where appropriate), and the decrease of the luminous flux of lamps. [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.5.18.](#)

Tilt: is how much the luminaire is lifted based on the fitting facing flat to the ground.

Outreach: how far away the fitting is from the column/wall its mounted on to the light source.

This isn't the end...

We don't just have the solution for what you need today. We also have the solutions you might need for the future. We have dedicated teams that deliver.

- **Lighting Impact and Planning** teams that focus on delivering the most effective and sensitive lighting solutions to support planning.
- **Residential** teams that cover all aspects of new development and redevelopment spanning private, section 38 and section 278 design packages.
- **Public Realm** teams that are experts in enhancing night-time public spaces to create inviting spaces and opportunity for local economies to thrive during the hours of darkness.
- **Electrical Teams** – we don't just put a light in the ground; we can help you get power to it as well! Additionally, we also offer design services for EV charging. As this market rapidly expands, make sure you have the experts managing the load, otherwise your EV charging solutions might not live up to expectations.
- **Strategic Infrastructure** teams that offer Lighting and Electrical expertise for complex transport networks and interchanges.
- **Consultancy Services** teams that help when you know what you want but you need someone to help you turn the idea into a project.

Finally, as innovators, you might be facing something bespoke or niche. Don't worry – we might have the answer you need. Feel free to get in touch!

THE POWER TO MAKE LIGHT WORK



Bradley Russell
Lighting Technician



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